The Risk Factors in Pre-Eclampsi in Medan, Indonesia

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ABSTRACT

High maternal mortality rate (MMR) in Indonesia is an indicator to be controlled. The goal is to achieve less than 70 per 100,000 live births by 2030. Preeclampsia is one problem induced the maternal deaths. It has been acknowledged there is some differences preeclampsia risk factors between regions. In this study, the reseracher want to identify the risk factors in preeclampsia cases in Medan, Indonesia. The study was restropective study using case study design. The unit analysis was medical record patients with preeclampsia who admitted to one private hospital in Medan, fom January until June 2021. The risk factors found in this study did not support previous studies. The maternal age and maternal parity found not different between groups of patients with preeclampsia. However, the older age and more parity had more perinatal problems. Other conditions found in the patiens were anaemia, diabetes mellitus, hepatitis B, hypertension heart diseases with hypoalbumin, and HIV. Mostly patients had severe preeclampsia, but no maternal death found. There were neonati problems recorded, which were intrauterine fetal retardation, intrauterine fetal death and premature. It is recommended to give education to the pregnant women to do their antenatal care periodically, especially with previous hystory of preeclampsia or with hypertension problem and young girl about anemia especially with ferrous deficiency problem and the adequate nutrition to be consumed. It also a good idea to have blood pressure monitoring device at home and know to use it in order to monitor the blood pressure more often in pregnancy period.

INTRODUCTION

Indonesia is a country with an issue in high maternal mortality rate (MMR). As the country with Sustainable Development Goal 3.1 (SDGs) of reducing the global MMR to less than 70 per 100,000 live births by 2030 (Cameron, L., Suarez, D.C., & Cornwel, K., 2019), Indonesia is still working to achieve the goal. However, the lack of data reported related to the risk factors evidence in MMR is one issue that must be resolved. Good maintaining data can help to make right evaluation and design in maternal health program. Moreover, understanding the risk factors of MMR can help to design the data colecting system. Risk factors in MMR can direct to the vulnerable population in MMR who are needed proper intervention.

According to Mahmood, A., M., Hendarto, H., Ardian, M., Laksana C., Damayanti, H.E., et.al.(2021), maternal death in rural district of Indonesia has related with poor service quality due to organizational and personel factors. They found poor aplication of protocols, poor information flow frontline hospitals to the peak referral hospitals, delay in emergency care, and delays in management of deteriorating patients. These were the main contributing factors to the deaths cases. One significant factor aggravate the MMR is the qualification of the health workers to manage the maternal mortality risk factors. It is mandatory to increase their ability especially to identify the risk factors in the maternal population.

According to Afifah, T., Tejayanti, T., Saptarini, I., Rizkianti, A., et.al. (2016) in their study in maternal death in Indonesia: follow-up study of the 2010 Indonesia population census, oedema, proteinuria and hypertensive disorder in pregnancy were at 27 percent, whereas complication during labour and delivery problems were accounted for 26 percent. Setyorini, D., Santoso, B., Martini, S., & Ernawati (2017), found that the risk factors for preeclampsia include nullipara, multiple pregnancy, <20 years or >35 years, preeclampsia and

eclampsia history in previous pregnancies, family history of preeclampsia and eclampsia, renal disease, hypertension. Diabetes mellitus pre-pregnancy, obesity, anxiety, antenatal care, contraceptive use, educational level, knowledege, occupation and sosioeconomic factors. Until now, the cause of pre-eclampsia and eclampsia have not identified yet, only the risk factors have been identified. And it has been acknowledged there is some differences risk factors between region. In this study, the reseracher want to identify the risk factors in preeclampsia cases in Medan.

METHOD

The design of this research was a case study from Luck, Jackson and Usher (2005). This method was used to describe the phenomenon of risk factors for preeclampsia patiens. The case study design of this research was descriptive exploratory with restropective data. Data was taken from preeclampsia patients who admitted to one private hospital in Medan, Indonesia from January until June 2021. The unit of analysis used in this study was medical record data. There were 64 (sixty-four) medical records identified. The data was described according to maternal age, maternal parity, gestational weak, blood pressure and other conditions written in the medical resume. The data was desribed descriptively using percentage. The risk factors identified from the data were compared to the previous studies in maternal risk factors of preeclampsia.

Ethical Consideration

Ethical consideration in this study was asked from Research and Community Service Board of University of Imelda Medan which is also have responsible in research ethical consideration.

RESULTS AND DISCUSSION

Based on previous studies, the risk factors of preeclampsia described in this study were: (1) maternal age, (2) maternal parity, (3) gestational weak, (4) blood pressure, (5) other symptoms. The data is described as follow.

(1). Maternal Age

According to the data in this study, mostly patients were in the age 20-35 years, there were 26 (40 %) patients in 20-29 years old, 20 (31) % patients in 30-35 years old, 13 (20 %) in 36 – 40 years old and 5 (7 %) with age more than 40. The data in this study showed that preeclampsia was more occurred in mother with age of 20-35 years old. But it also showed preeclampsia cases in older mother. From the medical resume, it was recorded some severe conditions in the preeclampsia cases with older age. The conditions noted like uterine atonia with post partum haemorrhage and superimposed with other chronic disease lika hytertension heart disease, hypoalbumin and obesity.

(2) Maternal Parity

According to the data in this study, mostly patients were given second birth (second gravida). 17 (26 %) patients were given first birth, 20 (31 %) for the second birth, 13 (20 %) for the third birth, 8 (12 %) for the fourth birth and 5 (7 %) for the fifth birth. The data were not showed any significant times of given birth to the risk of preeclampsia problem. However, from the medical resume there were some severe conditions noted in mother with grandemultipara. The conditions noted like severe anemia, superimposed hypertension, and uterine atonia. It was recorded that one mother who was givent sixth birth had two times abortus hystory, superimposed preeclampsia (with hypertention chronic disease before pregnancy), severe anemia with needed transfusion.

(3) Gestational Weak

According to the data in this study, mostly patient admited with aterm pregnancy. From the data there were 2 (3,1 %) babies were intrauterine fetal growth retardation, 8 (12,5 %) babies were premature and 1 (4,1 %) from the premature were intrauterine fetal death. Moreover, there were 2 (6,3 %) babies had fetal distress in the delivery process.

(4) Blood Pressure

According to the data mostly mother had severe preekclampsia, with systolic 150 - >200 mmHg were 54 (84,37 %) patients and more than 200 mmHg were 8 (12,5 %) patients. Moderate preeclampsia cases with sistolik less than 150 mmHg were 2 (3,1 %) patients. Whereas for diastolic, there were 57 (89,06 %) patients with diastolic more than 100 mmHg and 7 (10,9 %) patients with less than 90 - 100 mmHg.

(5) Other conditions

Other conditions recorded in the resume were obesity in 2 (3,1 %) patients, anemia 12 (18,7 %) and 7 (10,9 %) with severe anemia which needed transfusion. Anemia because of haemorrhage after delivery were 4 (4,7 %) patients. Some patiens also had other chronic diseases, which were diabetes mellitus, hepatitis B, hypertension heart diseases with hypoalbumin, and HIV. Only one patient (1,5 %) was identified with each condition. Two (3,1 %) patients had gamelli pregnancy. There were 12 (18,75 %) patients with secio cesarea hystory from previous pregnancy and 5 (7,8 %) patients with abortus hystory.

DISCUSSION

(1). Maternal Age

According to Sheen, J.J., Huang, Y., Wright, J.D., Goffman, D., D'Alton, M. & Friedman, A.M. (2019), severe morbiditi in maternal with preeclampsia is related to maternal age of pregnancy. They said women with 15-17 are at 30 % higher risk and women with 45 -54 are at 104 % higher risk. The morbidity is related to transfusion needed, acute renal failure and acute heart failure. Eclampsia is most common in younger mother, while acute renal failure and heart failure in older mother. Haskel, N.R., Elsen, I.S., Hass, Y., Rahav, R,, Metzger, A.M & Hendler, I. (2018) found the rate of severe preeclampsia, HELLP, eclampsia or the need for magnesium tretment did not differ between the groups. But they also mentioned that mother with older age more front to the postpartum complication.

Recent study showed that there was no different between aged group related to the preeclampsia condition. The cases in this study more in mother with 20 – 35 years old. There were none of the cases coming to the eclampsia condition. And none of the cases found death. All the patients can stabilized. The study showed mother with older age had other

health problems. The data confirmed that older mother with preeclampsia had more health problem to be managed.

(2). Maternal Parity

According to Opitasari, C., & Andayasari, L. (2014), mentioned from their study nulliparous and low educated woman had higher risk of (pre-) eclampsia. Sandstrom, A., Snowden, J,M,m Hoijer, J., Bottai, M., Karis Wikstrom, A.K. (2019), found in their study 4,4 % from 62.562 nulliparous women of their sample developed preeclampsia. And they found that the pre-eclampsia was developed in less than 34 weeks of gestation and les than 37 weeks of gestation.

Recent study showed there were no different between maternal parity group in developing preeclampsia. Data showed most women given second birth were highest. However, data showed that women with grandemultipara showed more complication. The fact in this study was not supported the previous studies. But it was supported that preeclampsia aggravated neonati problems. The data in recent study showed (3,1 %) babies were intrauterine fetal growth retardation, 8 (12,5 %) babies were premature and 1 (4,1 %) from the premature were intrauterine fetal death. Moreover, there were 2 (6,3 %) babies had fetal distress in the delivery process. These data confirmed that preeclampsia is affected the fetus wellbeing and their growth.

(3) Gestational Week

Guida, J.P.S., Surita, F.G., Parpinelli, M.A., Costa, M.L. (2017), concluded that preeclampsia problem aggravated termination of pregnancy. If the pre-eclampsia condition do not impaired fetal wellbeing, especially before 34 weeks, the pregnancy should be carefully surveilled, and the delivery postponed, aiming at improving the perinatal outcomes. Between 34 and 37 weeks, the decision on the timing of delivery should be shared with the pregnant woman and her family, regarding the risks of adverse outcomes associated with preeclampsia and prematurity.

In this study, the affect of preeclampsia condition to the babies also found. There were cases of intrauterine fetal growth retardation and delivered with low birth weight, premature and intrauterine fetal death. But in all the cases, fortunately no maternal death, although most the cases were severe pre eclampsia category. Recent study confirmed that preeclampsia affected fetus wellbeing and make perinatal problems to mother and child.

(4) Blood Pressure

The cases in this study mostly categorized as severe preeclampsia. Only 3,1 % categorize as moderate preeclampsia. According to Garovic, V.D. & August, P. (2013), cardiovascular death rates continur to rise for women under age 55, underlying the importance of focusing on female specific conditions that may increase cardiovascular risk, including pregnancy-related disorder. Preeclampsia may have an impact on women's health beyond their pregnancies and has been associated with increased risks for future hypertension and cardiovascular disease, such as coronary heart disease and stroke.

Braunthal, S. & Brateanu, A, (2019), mentioned that severe hypertension and non-severe hypertension with evidence of end-organ damage need to be controlled. Despite of the level of hypertension, the high blood pressure is the source to the damage of many vital organ like kidney, brain and the heart. It is very important to keep it in normal scale of systolic and dioastolic. Mother who experienced preeclampsia in their pregnancy should check their blood pressure periodically to identify any increasin blood pressure in the future.

(5) Other Conditions

Other conditions found in this study were can be related with the pre-eclampsia conditions or as chronic disease that patients have had before pregnancy. Anemia and severe anemia is one condition found in the sample. Mother can already have severe anaemia with their pregnancy or the severe anemia occur because of haemorrhage problem in the postpartum period. Ali, A.A., Rayis, D.A., & Adam, I. (2011), mentioned the greater the severity of the anaemia during pregnancy, the greater the risk of preeclampsia, preterm delivery, low birth weigth infant and stillbirth. Anaemia during pregnancy is a major public health problem, especially in developing countries, like Indonesia. The anaemia is one sign of low nutrition intake which is related with micronutrient ferrous. Nainggolan, S. & Siagian, F.E. (2019), found in their study in Sumedang district West Java, out of 209 pregnant women examined, they found 39 pregnant women (18,7 %) suffering from anemia. And when they confirmed with serum iron analysis they found 23,3 % of the total number of pregnant women with iron deficiency. Recent study confirmed that anaemia founded in preeclampsia pregnancy.

The other conditions found were related with chronic disease that mother had before their pregnancy, like HIV, Diabetes Mellitus and Hepatitis B. But in one patient with hypertension heart disease (HHD), in patient with third parous and 42 years old. The caused of the HHD could be the hystory of preeclampsia in her previous pregnancy. She also had abortus hystory in her two pregnancy. The condition strengthen the posibility of preeclampsia hystory in her previous pregnancy.

CONCLUSIONS AND RECOMMENDATIONS

Preeclampsia is a condition that agravated the morbidity and mortality in the perinatal period. The caused of preeclampsia had not been identified, but several risk factors had found in many studies. The data found in this study is not supported many previous studies. The data showed that maternal age and maternal parity were not showed any different between the groups. Althought, it showed older age and more parity had more complicated problems. Anemia in pregnancy also identified in this study. It was also known that mostly all the cases were severe preeclampsia, but there were none maternal death found. Some cases had more problems in post partum period like uterine atonia, and post partum haemorrhage. Nevertheless, neonati well being did affected. There were cases of premature and intra uterine fetal retardation and fetal death. It is recommended to give education to the pregnant women to do their antenatal care periodically, especially with previous hystory of preeclampsia or with hypertension problem. Moreover, it is also very important to educate young girl about anemia especially with ferrous deficiency problem and the adequate nutrition to be consumed. It also a good idea to have blood pressure monitoring device at home and know to use it in order to monitor the blood pressure more often in pregnancy period.

Conflict of Interest Statement

The authors declare that there is no potential conflict of interest in connection with the writing and publication of this article

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